

**AMENDMENTS TO THE CLAIMS:**

This listing of claims will replace all prior versions and listings of claims in the application.

**COMPLETE LISTING OF THE CLAIMS:**

Claims 1-20 : (Canceled)

Claim 21 : (Currently Amended) ~~A means An apparatus~~ for controlling optical amplifier gain, comprising:

- a) a source for generating a gain control signal;
- b) an optical amplifier for receiving at least one ~~optical input signal channel of optical input signal channels~~ at a first end;
- c) ~~means a coupler~~ for providing the gain control signal to the optical amplifier at a second end thereof; and
- d) the source being arranged to generate the gain control signal at a power level that produces stimulated Brillouin scattering in the optical amplifier, ~~wherein the gain control signal is at a higher wavelength than any of the optical input signal channels.~~

Claim 22 : (Currently Amended) The ~~means~~ apparatus according to claim 21, comprising ~~control means a controller~~ for identifying a change in an input signal and for varying the power level of the gain control signal to compensate for the identified change.

Claim 23 : (Currently Amended) The ~~means~~ apparatus according to claim 22, in which the ~~control means comprises monitor means controller comprises a monitor~~ for monitoring a power of the input signal and for varying the power level of the gain control signal to compensate for changes in the monitored power.

Claim 24 : (Currently Amended) The means apparatus according to claim 22, in which the ~~control means comprises means controller comprises apparatus~~ for obtaining information on the at least one optical input signal channel from one of an optical supervisory channel and a pilot tone.

Claim 25 : (Currently Amended) The means apparatus according to claim 21, in which the gain control signal falls within a gain bandwidth of the optical amplifier.

Claim 26 : (Currently Amended) The means apparatus according to claim 21, further comprising means a monitor for monitoring the power level of the gain control signal.

Claim 27 : (Currently Amended) The means apparatus according to claim 21, in which the amplifier is a Raman amplifier.

Claim 28 : (Currently Amended) The means apparatus according to claim 21, in which the amplifier is a distributed Raman amplifier.

Claim 29 : (Currently Amended) The means apparatus according to claim 21, in which the amplifier is a rare earth doped fiber amplifier.

Claim 30 : (Currently Amended) A method of controlling optical amplifier gain, comprising the steps of:

- a) introducing at least one optical input signal channel of optical input signal channels into a first end of an optical amplifier;
- b) generating a gain control signal and introducing the gain control signal at a second end of the optical amplifier; and

c) generating the gain control signal at a power level that produces stimulated Brillouin scattering in the optical amplifier, wherein the gain control signal is at a higher wavelength than any of the optical input signal channels.

Claim 31 : (Previously Presented) The method according to claim 30, including the steps of identifying a change in an input signal and varying the gain control signal power level to compensate for the identified change.

Claim 32 : (Previously Presented) The method according to claim 31, including the step of monitoring a power of the input signal and varying the gain control signal power to compensate for a change in the monitored power.

Claim 33 : (Currently Amended) The method according to claim 31, including obtaining information at the at least one optical input signal channel from one of an optical supervisory channel and a pilot tone.

Claim 34 : (Previously Presented) The method according to claim 30, in which the gain control signal falls within a gain bandwidth of the optical amplifier.

Claim 35 : (Previously Presented) The method according to claim 30, further including the step of monitoring the power level of the gain control signal.

Claim 36 : (Previously Presented) The method according to claim 30, in which the amplifier is a Raman amplifier.

Claim 37 : (Previously Presented) The method according to claim 30, in which the amplifier is a distributed Raman amplifier.

Claim 38 : (Previously Presented) The method according to claim 30, in which the amplifier is a rare earth doped fiber amplifier.

Claim 39 : (New) The apparatus according to claim 21, wherein  
the wavelength of the gain control signal is around 10 to 15 nm higher than any of the optical input  
signal channels.

Claim 40 : (New) The method according to claim 30, wherein the  
wavelength of the gain control signal is around 10 to 15 nm higher than any of the optical input  
signal channels.